

#501

HELIOS A AND B
HOURLY AVERAGED MAGNETIC FIELD DATA
74-097A-02A
76-003A-02A

HELIOS-A

HOURLY AVERAGED MAGNETIC FIELD

74-097A-02A

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED ONE 9-TRACK, 6250 BPI TAPE WRITEN IN BINARY. THERE IS ONE RESTORED TAPE. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6205 BPI. THE ORIGINAL TAPE WAS CREATED ON AN IBM 360 COMPUTER AND WAS RESTORED ON THE MRS SYSTEM. THE DR AND DS NUMBER ALONG WITH THE CORRESPONDING D NUMBER AND TIME SPAN IS AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR005274	DS005274	D045444	2	12/14/74 - 12/31/77

HELIOS-B

HOURLY AVERAGED MAGNETIC FIELD

76-003A-02A

This data set has been restored. There was originally one 9-track, 6250 BPI tape written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 360 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR005356	DS005356	D045445	1 - 2	01/17/76 - 12/31/77

REQ. AGENT

LSM

RD#

V0092

ACQ. AGENT

HKH

HELIOS A & B

HOURLY AVERAGED
MAGNETIC FIELD

74-097A-02A

76-003A-02A

This Data Set catalog consists of 1 Helios A and 1 Helios B tape. They are 6250, Binary, 9 track, and have 2 files each. The Tapes were created on the IBM 360 computer.

'D' and 'C' numbers plus Time Span are as follows:

74-097A-02A

<u>D#</u>	<u>C#</u>	<u>Time Span</u>
D-45444	C-21662	12/14/74-12/31/77

76-003A-02A

<u>D#</u>	<u>C#</u>	<u>Time Span</u>
D-45445	C-21663	01/17/76-12/31/77

July 9, 1981

TO: 601/Director, National Space Science Data Center
FROM: 692/Interplanetary Physics Branch/L. F. Burlaga

Accompanying this memo you will find data from the magnetic field experiment E3 on Helios 1 and 2 (Principal Investigator, Dr. F. Mariani) which we are submitting for deposit in the NSSDC. Specifically, I am sending: 1) two tapes with hour averages of the magnetic field; 2) printouts of the data on those tapes; and 3) a 2-page description of the data on the tapes and the tape format. These are not the "final" data from the period from launch to 1978, but they are the best and most complete data that we have.



Leonard F. Burlaga

Attachments

Helios Magnetic Field (E3) Hour-Average Data Tapes

JULY 1, 1981

- 1) There are 2 tapes, one with Helios-A data and another with Helios-B data.
- 2) Description of Tape: 9 tracks, 6250 BPI, RECFM = FB, BLKSIZE = 32000, LRECL = 80, LABEL = NL
- 3) There are 2 files on each tape--the first contains a table describing the symbols of the data on the tape and, the second file gives the magnetic field data.
- 4) Description of the data:

IK = 0 for data taken at bit rate > or = 256 BPS (Detail Mode)
 = 1 at bit rate < or = 128 BPS (Average Mode)
HEL = Name of S/C, A or B
IYY = Year with first two digits suppressed
ITIPO = Quality information (0 for good data, 1 for doubtful data)
IDD = Day (Jan. 1 = Day 1)
IHH = Hour } Time of the beginning of the 1-hour average.
IMM = Min.
X = XSE Field Component (In ecliptic, oriented toward Sun) (*)
Y = YSE Field Component (In ecliptic, perpendicular to XSE, and
 oriented opposite to the earth's velocity) (*)
Z = ZSE Field Component (Perpendicular to ecliptic, oriented
 celestial northward) (*)
B = $\text{SQRT}(<\text{XSE}>^{**2} + <\text{YSE}>^{**2} + <\text{ZSE}>^{**2})$
T = Elevation angle of the vector B over ecliptic. (**)
PH = Longitude of B (PH = 0 toward the sun, 90 deg. along YSE (**))
BB = Average of individual vectors B (Not available yet; at present

it is put = 0.0)

N = Number of individual vectors in each average

V1 = Standard deviation on B

V2 = Standard deviation on BB (Not available yet; at present
 it is put = 0.0)

NP = Progressive list number

(*) = The Z component has been corrected for any spurious
 contribution from S/C.
 The X, Y components are corrected for any similar effect when
 in detail mode (IK = 0). No correction has been made on the X,
 Y components when in average mode. (IK = 1).

(**) = Some uncertainty (usually < or = 5 degrees) in this angle is
 possible when in average mode due to reasons explained in
 (*).

Helios Magnetic Field (E3) Hour-Average Data Tapes

JULY 1, 1981

ASCII VERSION

- 1) There are 2 tapes, one with Helios-A data and another with Helios-B data.
- 2) Description of Tape: 9 track, 6250 BPI, RECFM=FB, BLKSIZE=25600, LRECL=64, LABEL=NL.
- 3) There are 2 files on each tape--the first contains a table describing the symbols of the data on the tape, and the second contains the magnetic field data.
- 4) Description of the Data:

<u>TYPE</u>	<u>WORD</u>	<u>BYTE</u>	<u>DESCRIPTION</u>
I1	IK	2	0 for data taken at bit rate > 256 BPS (Detail Mode) 1 for data taken at bit rate < 128 BPS (Avg. Mode)
A1	HEL	1	Name of S/C, A or B
I2	IYY	4-5	Year with first two digits suppressed
I1	ITIPO	3	Quality information (0 for good data, 1 for doubtful data)
I3	IDD	6-8	Day of Year (Jan. 1 = Day 1)
I2	IHH	9-10	Hour
I2	IMM	11-12	} Time of the beginning of the 1-hour average Min
F7.2	B _x	13-19	XSE Field Component (In ecliptic, oriented toward Sun)*
F7.2	B _y	20-26	YSE Field Component (In ecliptic, perpendicular to XSE and oriented opposite to the earth's velocity)*
F7.2	B _z	27-33	ZSE Field Component (Perpendicular to ecliptic, oriented celestial northward)*
F7.2	B	34-40	$\sqrt{B_x^2 + B_y^2 + B_z^2}$
F6.2	T	41-46	Elevation angle of the vector B over ecliptic**
F6.2	PH	47-52	Longitude of B (PH=0 toward the sun, 90 degrees along YSE)**

<u>TYPE</u>	<u>WORD</u>	<u>BYTE</u>	<u>DESCRIPTION</u>
I5	N	53-57	Number of individual vectors in each average.
F7.2	V1	58-64	Standard deviation on B

*The Z component has been corrected for any spurious contribution from S/C.
 The X and Y components are corrected for any similar effect when in detail mode (IK=0). No correction has been made on the X or Y components when in average mode (IK=1).

**Some uncertainty (usually < 5 degrees) in this angle is possible when in average mode due to reasons explained in above footnote.

```

1      PROGRAM HELCNV
2      C   ***
3      C   * THIS PROGRAM CONVERTS A HELIOS A,B TAPE FROM IBM BINARY TO ASCII
4      C   ***
5      C   * INTEGER*2 QNUM,INDEX(7)
6      C   * DIMENSION BUF(20,400),IBUF(20,400)
7      C   * ASCBUF(15,400)

```

LOGICAL POPT

EQUIVALENCE(IBUF,BUF)

DATA INDEX/8,9,10,11,12,13,16/

IFIRST = 1

CONTINUE

NREC = 0

NRECW = 1

CONTINUE

NREC = NREC + 1

CALL READ(IBUF,32000,KSTAT)

IF(KSTAT) 10,20,

LRECL = KSTAT/80

GO TO 50

WRITE(6,5100)NREC,KSTAT

GO TO 999

CONTINUE

CALL EOF

NREC = NREC - 1

NRECW = NRECW - 1

NEOF = NEOF + 1

WRITE(6,5200)NREC,NRECW

IF(NEOF .LT. 2) GO TO 1

NRECW = NRECW + 1

WRITE(6,5300)NREC,NRECW

GO TO 999

CONTINUE

NEOF = 0

IF(IFIRST .NE. 1) GO TO 60

IFIRST = 0

37 C ***

38 C * FIRST FILE CONTAINS 1 HEADER RECORD

39 C * CONVERT HEADER RECORD TO ASCII AND REDUCE SIZE TO 24000

40 C ***

41 CALL CNVBUFTIBUF(1,1),ASCBUF(1,1),25600,3)

NBYTES = 25600

42 GO TO 210

43 GO TO 210

44 CONTINUE

45 C ***

46 C * DATA FILE

47 C * CONVERT FROM IBM 3081 TO MODCOMP BINARY

48 C ***

49 DO 200 J = 1,NREC

50 DO 100 I = 1,7

51 BUF(INDEX(I),J) = A360(BUF(INDEX(I),J))

52 100 CONTINUE

53 C ***

54 C * CONVERT FROM MODCOMP BINARY TO ASCII

55 C ***

56 ENCODE(64,5000,ASCBUF(1,J),QNUM,ERR=700)IBUF(1,J),IBUF(4,J),

IBUF(3,J),(IBUF(1,J),I=5,7),

(BUF(1,J),I=8,13),IBUF(15,J),

57 *

58 *

```
59      *  
60      C *** CONVERT SPACECRAFT ID TO ASCII AND MOVE INTO OUTPUT BUFFER  
61      C ***  
62      C *** CALL CNVBUF(TBUF(2,J),ISP,4,3)  
63      CALL MOVECH(ISP,1,ASCBUF(1,J),1,1)  
64      IF(POPT(0))WRITE(6,5120)(ASCBUF(1,J),1,16)  
65      200 CONTINUE  
66      NBYTES = LRECL*64  
67      210 CALL HWRITE(ASCBUF,NBYTES,IERR)  
68      IF(IERR .NE. 0) GO TO 800  
69      WRITE(6,* )NREC,NRECW,KSTAT,NBYTES  
70      NRECW = NRECW + 1  
71      GO TO 5  
72      700 CONTINUE  
73      WRITE(6*5700)NFILE,NREC,QNUM  
74      IF(POPT(0))WRITE(6,5120)(ASCBUF(1,J),1,15)  
75      76      GO TO 999  
76      77 800 CONTINUE  
77      WRITE(6*5800)NFILE,NREC  
78      79 999 CALL INREW  
80      CALL EOF  
81      CALL EOF  
82      CALL OUTREW  
83      STOP  
84      5000 FORMAT(1X,11,12,13,212,4F7*2,2F6*2,15,F7*2)  
85      5100 FORMAT(1X,12,13,212,4F7*2,2F6*2,15,F7*2)  
86      5120 FORMAT(1X,15A4)  
87      5200 FORMAT(1X,15A4)  
88      5700 FORMAT(1X,15A4)  
89      5800 FORMAT(1X,15A4)  
90      5900 FORMAT(1X,15A4)  
91      *  
92      *  
93      *  
TOTAL RECORDS WRITTEN = 94/  
ASS TO LO  
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$ $  
$ASS IN TAO  
$NOP
```


